

Statement of Basis

**Permit to Construct No. P-2013.0057
Project ID 62292**

**Brigham Young University Idaho
Rexburg, Idaho**

Facility ID 065-00011

Final

October 2, 2019
Kelli Wetzel 
Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01. et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
Btu	British thermal units
BYUI	Brigham Young University Idaho
CAA	Clean Air Act
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	CO ₂ equivalent emissions
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GACT	Generally Available Control Technology
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
iwg	inches of water gauge
km	kilometers
lb/hr	pounds per hour
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
mg/dscm	milligrams per dry standard cubic meter
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
PC	permit condition
PM	particulate matter
PM _{2.5}	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge

PTC	permit to construct
PTC/T2	permit to construct and Tier II operating permit
PTE	potential to emit
RICE	reciprocating internal combustion engines
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
scf	standard cubic feet
SCL	significant contribution limits
SIP	State Implementation Plan
SM	synthetic minor
SM80	synthetic minor facility with emissions greater than or equal to 80% of a major source threshold
SO ₂	sulfur dioxide
SO _x	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds
yd ³	cubic yards
µg/m ³	micrograms per cubic meter

FACILITY INFORMATION

Description

Brigham Young University Idaho (BYUI, formerly Ricks College) is a four-year private university. Emissions units and activities include the central heating plant boilers, a natural gas-fired combustion turbine, emergency IC engines, coating operations, laboratories, welding operations, and storage tanks.

The Central Heating Plant was initially constructed in 1963 and included Boilers No. 1 and 2. Boiler No. 3 was added in 1966, and Boiler No. 4 was added in 1973. Boiler No. 1 was removed in 2001, the same year that Boiler No. 5 was installed. Boilers No. 2, 3, and 4 are coal-fired units, and Boiler No. 5 is a multi-fuel boiler capable of burning distillate fuel oil or gas. The ash handling system is used to transport and remove coal ash generated by the boilers.

Emergency generators located throughout the campus provide electric power when line power is not available. Welding and spray paint coating operations are used for facility maintenance purposes, including the installation, building, and repair of new equipment or structures (e.g., welding for the building and repair of stage sets at the Drama location).

In 2014-2015 the facility replaced the three existing coal-fired boilers, Boilers No. 2, 3, and 4, with two new natural gas-fired boilers, new Boilers No. 2 and 3, retrofitted existing Boiler No. 5 (which is now known as new Boiler No. 4) with a new natural gas-fired burner, and installed a natural gas-fired combustion turbine with a heat recovery steam generator (HRSG) with a duct burner. During the construction project, Boiler No. 4 was retrofitted with a lower heat input burner than was proposed in the application and permitted. In addition, the diameter of the HRSG bypass stack installed was larger than originally proposed and modeled.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

November 18, 2016	P-2013.0057, Permit the "as installed" Boiler No. 4 and HRSG bypass stack diameter and modeled additional operation scenarios for the gas turbine and duct burners, Permit status (A, but will become S upon issuance of this permit)
November 6, 2014	P-2013.0057, Replacement of three existing coal-fired boilers with two new natural gas-fired boilers, the retrofit of one existing coal-fired boiler with a natural gas-fired burner, the installation of a new natural gas-fired combustion turbine with a duct burner and a heat recovery steam generator (HRSG), and the installation of four new emergency IC engines (two of which were previously installed), Permit status (S)
November 15, 2013	T2-2009.0031, Discontinue use of the No. 4 boiler, Permit status (S)
June 2, 2009	T2-2009.0031, T2/PTC renewal and modification to increase Boiler Nos. 2-4 annual fuel combustion limit, replace one emergency generator, add one emergency generator, add three spray booths, and add welding operations, Permit status (S)
February 12, 2007	PTC/T2 No. P-060500, T2/PTC modification to increase the allowable sulfur content of coal used in Boiler Nos. 2-4, reduce the allowable sulfur content of No. 2 fuel oil used in Boiler No. 5, replace three emergency generators, and add three emergency generators, Permit status (S)
April 9, 2003	PTC/T2 No. T2-010511, T2/PTC renewal and modification to replace Boiler No. 1 with Boiler No. 5, and to incorporate synthetic minor limits, Permit status (S)
August 12, 1996	T2 No. 065-00011 (9506-078-2), initial T2 operating permit, Permit status (S)
September 4, 1990	PTC No. 1000-0011-001, PTC to construct four coal-fired boilers, Permit status (S)

Application Scope

This project is for a revision to the PTC at an existing minor facility.

The applicant has proposed to remove five emergency IC engines powering electrical generators from PTC number P-2013.0057. The five emergency IC engines are Engine 40014 in the Austin Tech Building, Engine 40004 in the Romney Building, Engine 40031 in the McKay Library, Engine 40013 in the Benson Building, and Engine 40020 in the Smith Building.

Application Chronology

August 26, 2019	DEQ received an application and an application fee.
August 28, 2019	DEQ determined that the application was complete.
September 4, 2019	DEQ made available the draft permit and statement of basis for peer and regional office review.
September 11, 2019	DEQ made available the draft permit and statement of basis for applicant review.
September 20, 2019	DEQ received the permit processing fee.
October 2, 2019	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment	Emission Point ID No.
SB-2	<u>Boiler No. 2:</u> Manufacturer: Cleaver Brooks Model: Type "O" Burner Mfg.: Natcom Burner Model: NOS-2-54 Installation Date: 2014 Heat input rating: 55.0 MMBtu/hr Primary Fuel: Natural gas Backup Fuel: ULSD fuel	N/A	<u>BLR2:</u> Exit height: 80.0 ft (24.38 m) Exit diameter: 3.35 ft (1.02 m) Exit flow rate: 15,255 acfm Exit temperature: 317 °F (158.3 °C)
SB-3	<u>Boiler No. 3:</u> Manufacturer: Cleaver Brooks Model: Type "O" Burner Mfg.: Natcom Burner Model: NOS-2-54 Installation Date: 2014 Heat input rating: 55.0 MMBtu/hr Primary Fuel: Natural gas Backup Fuel: ULSD fuel	N/A	<u>BLR3:</u> Exit height: 80.0 ft (24.38 m) Exit diameter: 3.35 ft (1.02 m) Exit flow rate: 15,255 acfm Exit temperature: 317 °F (158.3 °C)
SB-4	<u>Boiler No. 4:</u> Manufacturer: Cleaver-Brooks Model: Type CBEX Elite Burner Mfg.: Cleaver-Brooks Burner Model: CBEX Elite Installation Date: 2014 Heat input rating: 25.682 MMBtu/hr Primary Fuel: Natural gas Backup Fuel: ULSD fuel	N/A	<u>BLR4:</u> Exit height: 80.0 ft (24.38 m) Exit diameter: 3.35 ft (1.02 m) Exit flow rate: 15,255 acfm Exit temperature: 317 °F (158.3 °C)

Source ID No.	Sources	Control Equipment	Emission Point ID No.
Unit No. 1	<u>Combustion Turbine:</u> Manufacturer: Solar Turbine Model: Taurus 60-7901S Manufacture Date: 2013 Heat input rating: 60 MMBtu/hr Primary Fuel: Natural gas Backup Fuel: ULSD fuel	N/A	<u>HRSG:</u> Exit height: 80.0 ft (24.38 m) Exit diameter: 4.5 ft (1.37 m) Exit flow rate: 254,476 acfm Exit temperature: 254 °F (123.3 °C) <u>Bypass:</u> Exit height: 80.0 ft (24.38 m) Exit diameter: 4.5 ft (1.37 m) Exit flow rate: 510,719 acfm Exit temperature: 950.1 °F (510.1 °C)
HRSG-1	<u>Duct Burner:</u> Manufacturer: Natcom Burner Model: MF-4(S)-70 HRSG Manufacture Date: 2013 Heat input rating: 30 MMBtu/hr Fuel: Natural gas only	N/A	
EG-481	<u>Emergency IC Engine 481:</u> Manufacturer: Volvo Model: TAD1641GE Manufacture Date: 2013 Max. rating: 757 bhp Tier rating: Tier 2 Fuel: ULSD only	N/A	<u>EG481:</u> Exit height: 35.0 ft (10.67 m) Exit diameter: 1.0 ft (0.31 m) Exit flow rate: 3,899 acfm Exit temperature: 893 °F (478.3 °C)
EG-40084	<u>Emergency IC Engine 40084,</u> <u>Central Energy Plant:</u> Manufacturer: Volvo Model: TAD1641GE Manufacture Date: 2013 Max. rating: 757 bhp Tier rating: Tier 2 Fuel: ULSD only	N/A	<u>EG40084:</u> Exit height: 35.0 ft (10.67 m) Exit diameter: 1.0 ft (0.31 m) Exit flow rate: 3,899 acfm Exit temperature: 893 °F (478.3 °C)
EG-40085	<u>Emergency IC Engine 40085,</u> <u>Central Energy Plant:</u> Manufacturer: Volvo Model: TAD1641GE Manufacture Date: 2013 Max. rating: 757 bhp Tier rating: Tier 2 Fuel: ULSD only	N/A	<u>EG40085:</u> Exit height: 35.0 ft (10.67 m) Exit diameter: 1.0 ft (0.31 m) Exit flow rate: 3,899 acfm Exit temperature: 893 °F (478.3 °C)
EG-40002	<u>Emergency Generator No. 40002:</u> Caterpillar Model SR4B Diesel-fired, 438 kW, located at Kimball Building, installed before 2004	N/A	Emergency Generator No. 40002 exhaust stack
EG-40077	<u>Emergency Generator No. 40077:</u> Generac Model 2570000000 Diesel-fired, 100 kW, located at Hart Building, installed before 2004	N/A	Emergency Generator No. 40077 exhaust stack
EG-40082	<u>Emergency Generator No. 40082:</u> Generac Model 9900000000 Diesel-fired, 500 kW, located outside the Heat Plant, installed 2008	N/A	Emergency Generator No. 40082 exhaust stack
EG-40083	<u>Emergency Generator No. 40083:</u> Generac Model 9900000000 Diesel-fired, 500 kW, located outside the Heat Plant, installed 2008	N/A	Emergency Generator No. 40083 exhaust stack
EG-40010	<u>Emergency Generator No. 40010:</u> Onan Model DGBB5007082 Diesel-fired, 35 kW, located at Spori/Kirkham Building, installed before 2004	N/A	Emergency Generator No. 40010 exhaust stack

Source ID No.	Sources	Control Equipment	Emission Point ID No.
EG-40080	<u>Emergency Generator No. 40080:</u> Olympian Model 94A03525-S Diesel-fired, 60 kW, located at Auxiliary Services, installed before 2004	N/A	Emergency Generator No. 40080 exhaust stack
EG-40016	<u>Emergency Generator No. 40016:</u> Generac Model 5690000000 Diesel-fired, 80 kW, located in Snow Performing Arts Center, installed 2006	N/A	Emergency Generator No. 40016 exhaust stack
EG-40015	<u>Emergency Generator No. 40015:</u> Generac Model 5170000000 Diesel-fired, 60 kW, located at Clark Building, installed 2005	N/A	Emergency Generator No. 40015 exhaust stack
EG-40009	<u>Emergency Generator No. 40009:</u> Generac Model 20A02581-S Diesel-fired, 40 kW, located at KRIC, installed before 2004	N/A	Emergency Generator No. 40009 exhaust stack
EG-40012	<u>Emergency Generator No. 40012:</u> Generac Model 3430000000 Diesel-fired, 80 kW, located at Ricks/Hinckley Building, installed before 2004	N/A	Emergency Generator No. 40012 exhaust stack
EG-40008	<u>Emergency Generator No. 40008:</u> Onan Model 5DNAA Diesel-fired, 50 kW, located at Radio Tower, installed before 2004	N/A	Emergency Generator No. 40008 exhaust stack
EG-40011	<u>Emergency Generator No. 40011:</u> Cummins Model DGGD5632344 Diesel-fired, 35 kW, located at the Substation, installed before 2004	N/A	Emergency Generator No. 40011 exhaust stack
EG-40018	<u>Emergency Generator No. 40018:</u> Generac Model 6950000000 Diesel-fired, 130 kW, located at Menan Butte, installed 2006	N/A	Emergency Generator No. 40018 exhaust stack
PFPB1	<u>Physical Facilities #1 Spray Booth:</u> Graco Model 220955 Airless spray gun, 5 gal/hr capacity	Pre-filter and filter system Airless spray gun	Physical Facilities #1 Spray Booth exhaust stack
PFPB2	<u>Physical Facilities #2 Spray Booth:</u> Graco Model 395 Airless spray gun, 5 gal/hr capacity	Pre-filter and filter system Airless spray gun	Physical Facilities #2 Spray Booth exhaust stack
ASB	<u>Austin Spray Booth:</u> Campbell Housefield HVLP spray gun, 1.5 gal/hr capacity	Pre-filter and filter system HVLP spray gun	Austin Spray Booth exhaust stack

Emissions Inventories

Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

The BYUI facility is an existing minor source. The emissions inventory is taken from the application submitted on June 6, 2015 that was used to develop P-2013.0057 issued on November 18, 2016.

Pre-Project Potential to Emit

Pre-project Potential to Emit is used to establish the change in emissions at a facility as a result of this project.

The following table presents the pre-project potential to emit for all criteria pollutants from all emissions units at the facility. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 2 PRE-PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)
Natural Gas Boiler No. 2	2.48	2.02	0.09	0.11	7.91	8.71	3.23	8.52	0.33	0.81
Natural Gas Boiler No. 3	2.48	2.02	0.09	0.11	7.91	8.71	3.23	8.52	0.33	0.81
Natural Gas Boiler No. 4	0.60	0.50	0.04	0.04	2.93	2.36	3.00	7.34	0.16	0.39
Combustion Turbine	0.72	1.80	0.09	0.04	24.12	29.90	5.49	24.08	0.13	0.54
Duct Burner	0.41	0.99	0.02	0.05	4.22	10.33	4.22	10.33	0.18	0.45
Emergency IC Engine 40084, Central Energy Plant	0.23	0.06	0.01	0.003	6.68	1.67	0.83	0.21	1.90	0.48
Emergency IC Engine 40085, Central Energy Plant	0.23	0.06	0.01	0.003	6.68	1.67	0.83	0.21	1.90	0.48
Emergency IC Engine 40002, Kimball Building	1.30	0.325	1.21	0.303	18.21	4.55	3.93	0.98	1.48	0.37
Emergency IC Engine 40077, Hart Building	0.30	0.08	0.28	0.07	4.16	1.04	0.90	0.23	0.34	0.09
Emergency IC Engine 40082, Manwaring Center	0.18	0.05	0.17	0.043	2.50	0.63	0.54	0.14	0.21	0.05
Emergency IC Engine 40083, Chiller Plant/BCTR/Manwaring Student Center/Facilities	0.18	0.05	0.17	0.043	2.50	0.63	0.54	0.14	0.21	0.05
Emergency IC Engine 40010, Kirkham Building and Spori Building	0.06	0.02	0.06	0.02	0.84	0.21	0.18	0.05	0.07	0.02
Emergency IC Engine 40080, Auxiliary Services	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053
Emergency IC Engine 40014, Austin Tech Building	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028
Emergency IC Engine 40016, Snow Performing Arts Center	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028
Emergency IC Engine 40004, Romney Building	0.15	0.038	0.14	0.035	2.08	0.520	0.45	0.113	0.17	0.043
Emergency IC Engine 40031, McKay Library	0.24	0.060	0.22	0.055	3.33	0.833	0.72	0.180	0.27	0.068
Emergency IC Engine 40013, Benson Building	0.15	0.038	0.14	0.035	2.08	0.520	0.45	0.113	0.17	0.043
Emergency IC Engine 40020, Smith Building	0.04	0.010	0.09	0.023	3.36	0.840	0.42	0.105	1.18	0.295
Emergency IC Engine 40015, Clarke Building	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053
Emergency IC Engine 40009, Radio/Graphic Services Building	0.12	0.030	0.11	0.028	1.67	0.418	0.36	0.090	0.14	0.035
Emergency IC Engine 40012, Ricks Building	0.24	0.060	0.22	0.055	3.33	0.833	0.72	0.180	0.27	0.068
Emergency IC Engine 40008, Radio Tower	0.02	0.005	0.02	0.005	0.21	0.053	0.05	0.013	0.02	0.005
Emergency IC Engine 40011, Substation	0.11	0.028	0.10	0.025	1.46	0.365	0.32	0.080	0.12	0.030
Emergency IC Engine 40018, Menan Butte Radio Tower	0.02	0.005	0.02	0.005	0.21	0.053	0.05	0.013	0.02	0.005
Portable Emergency IC Engine	0.74	0.185	0.69	0.173	10.40	2.600	2.24	0.560	0.85	0.213
Physical Facilities #1 Spray Paint Booth	0.341	1.50	0.00	0.00	0.00	0.00	0.00	0.00	18.30	80.16

Physical Facilities #2 Spray Paint Booth	0.116	0.02	0.00	0.00	0.00	0.00	0.00	0.00	13.10	0.66
Austin Spray Paint Booth	0.026	0.01	0.00	0.00	0.00	0.00	0.00	0.00	3.93	0.27
Welding Operations	0.0025	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pre-Project Totals	12.03	10.12	4.51	1.41	124.29	79.32	34.32	62.60	46.42	86.60

- a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Post Project Potential to Emit

Post project Potential to Emit is used to establish the change in emissions at a facility and to determine the facility's classification as a result of this project. Post project Potential to Emit includes all permit limits resulting from this project.

The following table presents the post project Potential to Emit for criteria pollutants from all emissions units at the facility as determined by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)	lb/hr ^(a)	T/yr ^(b)
Natural Gas Boiler No. 2	2.48	2.02	0.09	0.11	7.91	8.71	3.23	8.52	0.33	0.81
Natural Gas Boiler No. 3	2.48	2.02	0.09	0.11	7.91	8.71	3.23	8.52	0.33	0.81
Natural Gas Boiler No. 4	0.60	0.50	0.04	0.04	2.93	2.36	3.00	7.34	0.16	0.39
Combustion Turbine	0.72	1.80	0.09	0.04	24.12	29.90	5.49	24.08	0.13	0.54
Duct Burner	0.41	0.99	0.02	0.05	4.22	10.33	4.22	10.33	0.18	0.45
Emergency IC Engine 40084, Central Energy Plant	0.23	0.06	0.01	0.003	6.68	1.67	0.83	0.21	1.90	0.48
Emergency IC Engine 40085, Central Energy Plant	0.23	0.06	0.01	0.003	6.68	1.67	0.83	0.21	1.90	0.48
Emergency IC Engine 40002, Kimball Building	1.30	0.325	1.21	0.303	18.21	4.55	3.93	0.98	1.48	0.37
Emergency IC Engine 40077, Hart Building	0.30	0.08	0.28	0.07	4.16	1.04	0.90	0.23	0.34	0.09
Emergency IC Engine 40082, Manwaring Center	0.18	0.05	0.17	0.043	2.50	0.63	0.54	0.14	0.21	0.05
Emergency IC Engine 40083, Chiller Plant/BCTR/Manwaring Student Center/Facilities	0.18	0.05	0.17	0.043	2.50	0.63	0.54	0.14	0.21	0.05
Emergency IC Engine 40010, Kirkham Building and Spori Building	0.06	0.02	0.06	0.02	0.84	0.21	0.18	0.05	0.07	0.02
Emergency IC Engine 40080, Auxiliary Services	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053
Emergency IC Engine 40016, Snow Performing Arts Center	0.09	0.023	0.09	0.023	1.25	0.313	0.27	0.068	0.11	0.028
Emergency IC Engine 40015, Clarke Building	0.18	0.045	0.17	0.043	2.50	0.625	0.54	0.135	0.21	0.053
Emergency IC Engine 40009, Radio/Graphic Services Building	0.12	0.030	0.11	0.028	1.67	0.418	0.36	0.090	0.14	0.035
Emergency IC Engine 40012, Ricks Building	0.24	0.060	0.22	0.055	3.33	0.833	0.72	0.180	0.27	0.068
Emergency IC Engine 40008, Radio Tower	0.02	0.005	0.02	0.005	0.21	0.053	0.05	0.013	0.02	0.005
Emergency IC Engine 40011, Substation	0.11	0.028	0.10	0.025	1.46	0.365	0.32	0.080	0.12	0.030
Emergency IC Engine 40018, Menan Butte Radio Tower	0.02	0.005	0.02	0.005	0.21	0.053	0.05	0.013	0.02	0.005
Portable Emergency IC Engine	0.74	0.185	0.69	0.173	10.40	2.600	2.24	0.560	0.85	0.213
Physical Facilities #1 Spray Paint Booth	0.341	1.50	0.00	0.00	0.00	0.00	0.00	0.00	18.30	80.16

Physical Facilities #2 Spray Paint Booth	0.116	0.02	0.00	0.00	0.00	0.00	0.00	0.00	13.10	0.66
Austin Spray Paint Booth	0.026	0.01	0.00	0.00	0.00	0.00	0.00	0.00	3.93	0.27
Welding Operations	0.0025	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Post Project Totals	11.36	9.95	3.83	1.24	112.19	76.30	32.01	62.02	44.52	86.12

- a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if a public comment period may be required and to determine the processing fee per IDAPA 58.01.01.225. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 4 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM ₁₀ /PM _{2.5}		SO ₂		NO _x		CO		VOC	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Pre-Project Potential to Emit	12.03	10.12	4.51	1.41	124.29	79.32	34.32	62.60	46.42	86.60
Post Project Potential to Emit	11.36	9.95	3.83	1.24	112.19	76.30	32.01	62.02	44.52	86.12
Changes in Potential to Emit	-0.67	-0.17	-0.68	-0.17	-12.10	-3.02	-2.31	-0.58	-1.90	-0.48

TAP and HAP Emissions

As a result of the removal of five emergency IC engines, the TAP and HAP emissions slightly decreased as a result of this project.

Ambient Air Quality Impact Analyses

An ambient air quality impact analysis was not required for this project as there is a decrease in emissions and no proposed emissions increases at the facility.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Madison County, which is designated as attainment or unclassifiable for PM_{2.5}, PM₁₀, SO₂, NO₂, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Facility Classification

The AIRS/AFS facility classification codes are as follows:

For HAPs (Hazardous Air Pollutants) Only:

- A = Use when any one HAP has permitted emissions > 10 T/yr or if the aggregate of all HAPS (Total HAPs) has permitted emissions > 25 T/yr.
- SM80 = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits > 8 T/yr of a single HAP or ≥ 20 T/yr of Total HAPs.
- SM = Use if a synthetic minor (uncontrolled HAPs emissions are > 10 T/yr or if the aggregate of all uncontrolled HAPs (Total HAPs) emissions are > 25 T/yr and permitted emissions fall below applicable major source thresholds) and the permit sets limits < 8 T/yr of a single HAP and/or < 20 T/yr of Total HAPs.

- B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 10 and 25 T/yr HAP major source thresholds.
- UNK = Class is unknown.

For All Other Pollutants:

- A = Use when permitted emissions of a pollutant are > 100 T/yr.
- SM80 = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are ≥ 80 T/yr.
- SM = Use if a synthetic minor for the applicable pollutant (uncontrolled emissions are > 100 T/yr and permitted emissions fall below 100 T/yr) and permitted emissions of the pollutant are < 80 T/yr.
- B = Use when the potential to emit (i.e. uncontrolled emissions and permitted emissions) are below the 100 T/yr major source threshold.
- UNK = Class is unknown.

Table 5 REGULATED AIR POLLUTANT FACILITY CLASSIFICATION

Pollutant	Uncontrolled PTE (T/yr)	Permitted PTE (T/yr)	Major Source Thresholds (T/yr)	AIRS/AFS Classification
PM	14.07	9.95	100	B
PM ₁₀	14.07	9.95	100	B
PM _{2.5}	14.07	9.95	100	B
SO ₂	1.57	1.24	100	B
NO _x	105.65	76.30	100	SM
CO	82.29	62.02	100	B
VOC	89.02	86.12	100	B
HAP (single)	<10	0.42 ^a	10	B
Total HAPs	<25	0.241 ^a	25	B

- a) As discussed previously there was a small decrease in HAPs emissions as a result of this project. Therefore, the HAP PTEs were taken from the previous permitting project.

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the modified emissions source. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 Visible Emissions

The sources of PM emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.4, 3.4, 4.3, and 5.4.

Standards for New Sources (IDAPA 58.01.01.676)

IDAPA 58.01.01.676Standards for New Sources

The fuel burning equipment located at this facility, with a maximum rated input of ten (10) million BTU per hour or more, are subject to a particulate matter limitation of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume when combusting gaseous fuels. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. This requirement is assured by Permit Conditions 2.5, 3.5 and 4.4.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for PM₁₀, PM_{2.5}, SO₂, NO_x, CO, and VOC or 10 tons per year for any one HAP or 25 tons per year for all HAP combined as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

Because the facility has three boilers, a gas turbine, and CI emergency IC engines, the following NSPS requirements apply to this facility:

- 40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
- 40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
- 40 CFR 60, Subpart KKKK - Standards of Performance for Stationary Combustion Turbines

There was no change in the applicability analyses for Subparts Dc, IIII, and KKKK as a result of this project. Therefore, refer to the Statement of Basis for project 61299 for the analyses Subparts Dc and IIII and project 61532 for Subpart KKKK. DEQ is delegated for all three Subparts.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT/GACT Applicability (40 CFR 63)

The facility operates as a minor source of hazardous air pollutant (HAP) emissions, and because the facility has boilers, CI emergency IC engines, and paint spray booths installed at the facility, the following NESHAP requirements apply to this facility:

- 40 CFR 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

- 40 CFR 63, Subpart HHHHHH - National Emissions Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources
- 40 CFR 63, Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

There was no change in the applicability analyses for Subparts ZZZZ, HHHHHH, and JJJJJJ as a result of this project. Therefore, refer to the Statement of Basis for project 61299 for the analyses of these three subparts. DEQ is delegated for all three Subparts.

Permit Conditions Review

This section describes the permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Table 1.1 and Table 4.1 were updated to remove the emergency IC engine No. 40014 at the Austin Tech Building, engine No. 40004 at the Romney Building, engine No. 40031 at the McKay Library, engine No. 40013 at the Benson Building, and engine No. 40020 at the Smith Building.

Permit Condition 2.26 was revised to reference Subpart Dc and not Subpart IIII.

The heading regarding the Subpart ZZZZ requirements before Permit Condition 4.12 was updated to remove the emergency IC engines referenced as removed from Tables 1.1 and 4.1.

PUBLIC REVIEW

Public Comment Opportunity

Because this permitting action does not authorize an increase in emissions, an opportunity for public comment period was not required or provided in accordance with IDAPA 58.01.01.209.04 or IDAPA 58.01.01.404.04.

APPENDIX A – EMISSIONS INVENTORIES

Attachment 1

	NO limit for B1rs (10^3 gal/yr)	1034
NG	10 ³ gal/yr	1618.44
B1r2	339.44	
B1r3	249.44	
B1r4	272.22	
Turbine	384.00	
HRSC	163.33	
Diesel	10 ³ gal/yr	162.21
B1r2	162.21	
B1r3	162.21	
B1r4	147.46	
Turbine	176.95	
HRSC	0.00	
Total		472

Natural Gas											
900 Btu/l ^{ft} NG		Operation		CO			VOC			PM	
Heat Input (10 ⁶ Btu/hr)	Nat. Gas Usage (10 ⁶ ft ³ /hr)	Em. Factor Source	Em. Factor Units	Em. Rate (lb/hr)	Em. Rate (TPY)	Em. Factor Source	Em. Factor Units	Em. Rate (lb/hr)	Em. Rate (TPY)	Em. Factor Source	Em. Factor Units
ID	(ft ² /hr)	Note 7	lb/hr	lb/hr	TPY	Note 7	lb/MMBtu	lb/hr	TPY	Note 7	lb/10 ⁶ ft ³
Boiler 2	55.0	Migr.	3,234	3,234	7.92	Migr.	0.006	0.330	0.81	Table 1.4-2	0.0005
Boiler 3	55.0	Migr.	3,234	3,234	7.92	Migr.	0.006	0.330	0.81	Table 1.4-2	0.0005
Turbine	60.0	Migr.	5,490	5,490	24.05	Table 3.1-2a	0.0021	0.126	0.55	Table 3.1-2a	N/A
HRSG	30.0	Migr.	4,215	4,215	10.33	Table 1.4-2	5.5	0.183	0.45	Table 1.4-2	0.0005
Boiler 4 (Note 2)	50.0	Migr.	3,000	3,000	7.35	Migr.	0.006	0.300	0.74	Table 1.4-2	0.0005
Natural Gas											0.00011
BIU/Turbine/HRSG Subtotal											
Heat/Chilled H ₂ O Emer: Diesel Gen.		Em. Factor Source	Em. Factor Units	Em. Rate (lb/hr)	Em. Rate (TPY)	Em. Factor Source	Em. Factor Units	Em. Rate (lb/hr)	Em. Rate (TPY)		
kW											
EG481	500	Migr.	0.50	0.834	0.21	Table 3.3-1	0.0025	1.903	0.48	N/A	N/A
EG482	500	Migr.	0.50	0.834	0.21	Table 3.3-1	0.0025	1.903	0.48	N/A	N/A
EG483	500	Migr.	0.50	0.834	0.21	Table 3.3-1	0.0025	1.903	0.48	N/A	N/A
EG484	500	Migr.	0.50	0.834	0.21	Table 3.3-1	0.0025	1.903	0.48	N/A	N/A
Diesel Emissions (See Below)				14.52	2.90			0.03	0.01	0.0E+00	0.00021
All Over-Existing BIU Sources											
Emer: Generators (500 lb/yr ea) (Note 3)					4.03			35.33	74.117		0.01
Paint Booths (Note 4)											
Welding											
Ash Handling System											
Total Future Emissions (TPY)				22.51	65.34			44.24	79.38		0.0005
Escrow Permit Tot. Em. (TPY)				41.67	43.54			42.95	84.21		6.23
Ex. Prmt Coal Em (9300 TPY 4.36 TPY)											4.72
Inter. Decr. Current to Future (TPY)				-19.16	-21.50			-1.70	-4.83		-4.72

Attachment 1

Note 1. Boiler content of natural gas assumed to be 85 pppmw
Note 2. Boiler 4 is existing Boiler 5. Under current pricing \$383,877 10⁶ ft³/yr, and up to 400 bbl/yr on No.2 fuel oil (128,571 10⁶ gal/yr). Hourly CO₂, CH₄, and N₂O emissions are calculated using natural gas for 8760 bbl/yr.
Note 3. Emissions from an existing 300 MW emergency generator at the Heat Plant are included in this total. This generator will be removed and replaced by two new 500 kW generators (EG482 and EG484). Two of the 500 kW generators (EG481 and EG482) shown here as being part of this project are in fact installed at this time, but are not included in the existing generator emissions shown here because installation occurred after the last update of the Tier 1 permit.
Note 4. Physical Facilities #1 Spray Booth currently has no operational potential. The emission tools for paint spray booths shown here are based on restricting the Spray Booth to 40000 galls/yr throughput (equivalent to 8000 bbl/yr @ ±5.0 gal/ppmw).
Note 5. Physical Facilities #1 Spray Booth currently has no operational potential.
Note 6. Ultra-low Sulfur Diesel, S content = 15 ppmw, 31.3 gal/yr @ 7.05 lb/gal
Note 7. All emission factors supplied by the manufacturer have been multiplied by 1.5 to provide a safety factor as boiler performance degrades over the life of the boiler. Manufacturer's emission factors are supplied in Attachment X of this permit application.

APPENDIX B – FACILITY DRAFT COMMENTS

The facility had no comments on the draft permit on September 26, 2019.

APPENDIX C – PROCESSING FEE

PTC Processing Fee Calculation Worksheet

Instructions:

Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company: Brigham Young University Idaho
Address: 525 S. Center St.
City: Rexburg
State: Idaho
Zip Code: 83460
Facility Contact: Sam Merrick
Title: HVAC Services Manager
AIRS No.: 065-00011

N

Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

Y

Did this permit require engineering analysis? Y/N

N

Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	3	-3.0
SO ₂	0.0	0.2	-0.2
CO	0.0	0.6	-0.6
PM10	0.0	0.2	-0.2
VOC	0.0	0.5	-0.5
Total:	0.0	4.5	-4.5
Fee Due	\$ 1,000.00		

Comments: